

REMARKS

Reconsideration and allowance of the above-referenced application are respectfully requested. The foregoing amendments are responsive to the December 19, 2000 Office Action. Applicants respectfully request entry of the requested amendments and reconsideration of the application in view of the following comments.

Amendment to the Title

The title has been amended herein to better describe the invention. Applicant respectfully requests entry and approval of the new title.

Response to the Claim Rejections Under 35 U.S.C § 103

Claims 1-2, 4-6, 9-12, 14-16, 18-19, 21-23, and 25-27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,200,847 issued to Matawari, et al. Claims 1-2, 4-6, 8-19, 21-23, and 25-27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,143,582 issued to Vu, et al. The rejection asserts that Matawari or Vu allegedly teaches each element of the claims except for details of how the polycrystalline silicon and the devices were formed on the glass substrate, but these details were allegedly obvious to one of skill in the art.

The present invention is directed toward a method of manufacturing an active matrix display device wherein both a first electrode of the display and a second electrode of the driver circuit are comprised of a transparent oxide and are electrically connected to each other. Display devices with this feature have improved electrical contact (see page 9, lines 7-11). Each of the independent claims is amended herein to require this feature. None of the cited art teaches or suggests a first electrode of the display and a second electrode of the driver circuit electrically connected to each other and comprised of a transparent oxide and are.

In view of the foregoing distinctions, Applicants respectfully submit that independent Claims 1, 2, 6, 9, 12, 16, and 22 are patentably distinguished over the cited art. Applicants respectfully submit that Claims 1, 2, 6, 9, 12, 16, and 22 are in condition for allowance, and Applicants respectfully request allowance of Claims 1, 2, 6, 9, 12, 16, and 22.

Claims 4-5, 8, 10-11, 13-15, 17-19, 21, 23, and 25-27 depend either directly or indirectly from one of the independent claims. Each dependent claim further defines the independent claim from which it depends. In view of the foregoing remarks regarding Claims 1, 2, 6, 9, 12, 16, and 22, Applicants respectfully submit that Claims 4-5, 8, 10-11, 13-15, 17-19, 21, 23, and 25-27 are likewise in condition for allowance.

Applicants respectfully request allowance of dependent Claims 4-5, 8, 10-11, 13-15, 17-19, 21, 23, and 25-27.

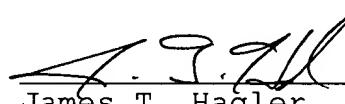
Summary

In view of the above amendments and remarks, all of the claims should be in condition for allowance. A formal notice to that effect is respectfully solicited.

Please apply any charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: 4/19/01



James T. Hagler
Reg. No. 40,631

JTH/smr

Fish & Richardson P.C.
PTO Customer No. 20985
4350 La Jolla Village Drive, Suite 500
San Diego, CA 92122
Telephone: (858) 678-5070
Facsimile: (858) 678-5099

10104148.doc

VERSION TO SHOW CHANGES MADE

In the Title:

The title has been changed to read:

--METHOD OF MANUFACTURING A DISPLAY DEVICE HAVING A DRIVER
CIRCUIT ATTACHED TO A DISPLAY SUBSTRATE--

In the Claims:

Claims 1, 2, 6, 9, 12, and 16 have been amended as follows.

1. (Amended) A method of manufacturing an active matrix display device wherein said display device has a first substrate provided with a plurality of pixel electrodes and switching thin film transistors for switching said pixel electrodes, and a first electrode comprising a transparent conductive oxide, the method comprising the steps of:

 forming a semiconductor film over a glass substrate;
 crystallizing said semiconductor film;
 patterning the crystallized semiconductor film into a plurality of semiconductor islands;
 forming a plurality of thin film transistors using said semiconductor islands;

forming a driver circuit with said plurality of thin film transistors;

forming a passivation film over said driver circuit;

forming a second electrode comprising a transparent conductive oxide over said passivation film, said second electrode electrically connected to said driver circuit through a contact hole of said passivation film;

attaching said glass substrate provided with said driver circuit to said first substrate so that said second electrode is electrically connected to said first electrode.

2. (Amended) A method of manufacturing a display device comprising:

preparing at least one display substrate provided with first electrodes comprising a transparent conductive oxide;

forming a semiconductor film over a glass substrate; crystallizing said semiconductor film formed over said glass substrate;

patterning the crystallized semiconductor film into a plurality of semiconductor islands;

forming a plurality of thin film transistors with said semiconductor islands for constituting a plurality of driver circuits;

forming a passivation film over said plurality of thin film transistors;

forming second electrodes comprising a transparent conductive oxide over said passivation film, said second electrodes electrically connected to said driver circuits through contact holes of said passivation film;

dividing said glass substrate to obtain at least one divided glass substrate wherein said divided glass substrate carries at least one of said driver circuits and at least one of said second electrodes thereon; and

attaching said divided glass substrate to a display substrate so that said [driver circuit] at least one of the second electrodes is electrically connected to said first electrodes.

6. (Amended) A method of manufacturing a display device comprising:

preparing at least one display substrate provided with first electrodes wherein said display substrate comprises a plastic;

forming a semiconductor film over a glass substrate; crystallizing said semiconductor film formed over said display substrate;

patterning the crystallized semiconductor film into a plurality of semiconductor islands;

forming a plurality of thin film transistors with said semiconductor islands as an active layer thereof for constituting a plurality of driver circuits;

forming a passivation film over said plurality of thin film transistors;

forming second electrodes over said passivation film, said second electrodes electrically connected to said driver circuits through contact holes of said passivation film;

dividing said glass substrate to obtain at least one divided glass substrate wherein said divided glass substrate carries at least one of said driver circuits thereon and at least one of said second electrodes; and

attaching said divided glass substrate to a display substrate so that said [driver circuit] at least one of the second electrodes is electrically connected to said first electrodes,

wherein both of said first and second electrodes comprise a transparent conductive oxide.

9. (Amended) A method of manufacturing an active matrix type display device comprising:

preparing at least one display substrate provided with a plurality of pixel electrodes and switching thin film transistors for switching said pixel electrodes and first electrodes for supplying signals to said switching thin film transistors;

forming a semiconductor film over a glass substrate;

crystallizing said semiconductor film;

patterning the crystallized semiconductor film into a plurality of semiconductor islands;

forming a plurality of thin film transistors with said semiconductor islands as an active layer thereof for constituting a plurality of driver circuits;

forming a passivation film over said plurality of thin film transistors;

forming second electrodes over said passivation film, said second electrodes electrically connected to said driver circuits through contact holes of said passivation film;

dividing said glass substrate to obtain at least one divided glass substrate wherein said divided glass substrate carries at least one of said driver circuits thereon and at least one of said second electrodes; and

attaching said divided glass substrate to a display substrate so that said [driver circuit is operationally] at least one of the second electrodes is electrically connected to

[said switching thin film transistors] at least one of said first electrodes,

wherein both of said first and second electrodes comprise a transparent conductive oxide.

12. (Amended) A method of manufacturing an active matrix type display device comprising:

preparing at least one display substrate provided with a plurality of pixel electrodes and switching thin film transistors for switching said pixel electrodes and first electrodes for supplying signals to said thin film transistors;

forming a semiconductor film over a glass substrate;
crystallizing said semiconductor film wherein the crystallization is promoted by adding a catalyst to said semiconductor film;

patterning the crystallized semiconductor film into a plurality of semiconductor islands;

forming a plurality of thin film transistors with said semiconductor islands as an active layer thereof for constituting a plurality of driver circuits;

forming a passivation film over said plurality of thin film transistors;

forming second electrodes over said passivation film, said second electrodes electrically connected to said driver circuits through contact holes of said passivation film;

dividing said glass substrate to obtain at least one divided glass substrate wherein said divided glass substrate carries at least one of said driver circuits thereon and at least one of said second electrodes; and

attaching said divided glass substrate to a display substrate so that said [driver circuit] at least one of the second electrodes is [operationally] electrically connected to said [switching thin film transistors] first electrodes,

wherein both of said first and second electrodes comprise a transparent conductive oxide.

16. (Amended) A method of manufacturing a display device comprising:

preparing at least one display substrate provided with a plurality of first electrodes comprising a transparent oxide;

forming a semiconductor film over a glass substrate;
crystallizing said semiconductor film;
patterning the crystallized semiconductor film into a plurality of semiconductor islands;

forming a plurality of thin film transistors with said semiconductor islands as an active layer thereof for constituting a plurality of driver circuits;

forming a passivation film over the plurality of thin film transistors;

forming transparent electrodes over said passivation film wherein said transparent electrodes comprise a transparent conductive oxide;

forming metal bumps on said transparent electrodes;

dividing said glass substrate to obtain at least one divided glass substrate wherein said divided glass substrate carries at least one of said driver circuits thereon; and

attaching said divided glass substrate to a display substrate so that said driver circuit is electrically connected to said first electrodes through said transparent electrodes and said metal bumps.